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Physical effects in electrical discharge of atmospheric pressure caused by external flow of copper cathode by water

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Abstract

© Published under licence by IOP Publishing Ltd. This article experimentally studies gas discharge between copper electrodes in the current range of 5-20 A. The electrode spacing was varied in the range of 45-70 mm. The cathode was a rod with a diameter of 10 mm and was located in the water stream, poured from a dielectric tube. Three variants that differed in the working end of the cathode arrangement were studied: 1) over the water; 2) on the surface of the water; 3) underwater. It was established that in the second variant in the plasma column near the cathode an extended area is formed with of intense radiation of hydrogens. In the third option, a significant erosion of the cathode was detected. It was revealed that in the process of erosion fine particles of copper metal are formed.

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